cont'd

a step of mounting a semiconductor chip on the metal wire that is bared; and

a step of separating the connection substrate from the second base.

REMARKS

Claims 1-16 are pending herein. Claims 4, 10 and 16 have been withdrawn from consideration by way of a prior Restriction Requirement.

By this Amendment, claim 11 is amended to correct an antecedent basis issue with respect to the term "the base" appearing in claim 11. No new matter is added by this Amendment.

The attached Appendix includes a marked-up copy of the rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

In view of the foregoing amendment and the following remarks, reconsideration of this application is respectfully requested.

I. Rejection Under 35 U.S.C. §112, Second Paragraph

Claims 11-15 were rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite. This rejection is respectfully traversed.

In the Office Action, it was asserted that the term "the base" in line 2 of claim 11 lacked antecedent basis in the claim. By this Amendment, claim 11 has been amended to change "the base" to "a base." In view of the amendment to claim 11, Applicant respectfully submits that claim 11 fully complies with the requirements of 35 U.S.C. §112, second paragraph. Reconsideration and withdrawal of this rejection are respectfully requested.

II. Rejection Under 35 U.S.C. §102(e)

Claims 1, 2, 5-7, 9, 11 and 13-15 were rejected under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent No. 5,977,641 (hereinafter Takahashi). This rejection is respectfully traversed.

Present claim 1 recites a method of manufacturing a connection substrate in which the method includes a step of "separating the metal wires and the insulation layer from the base." Present claim 5 recites a method of manufacturing a semiconductor device in which the method includes "a step of separating the connection substrate from the base." Present claim 11 also recites a method of manufacturing a semiconductor device, the method including "a step of separating the first base from the connection substrate."

Contrary to the allegation set forth in the Office Action that Takahashi describes separating the base 1 from the other parts of the structure described therein, Takahashi in fact describes no such separating step. For this reason alone, the anticipation rejection is improper and should be withdrawn.

More specifically, Takahashi describes a method of making a semiconductor device. As shown in Figs. 3A to 3C and Figs. 4A to 4C, and as described at col. 6, line 52 to col. 8, line 21, the method comprises forming a barrier metal layer 11 upon a semiconductor wafer 1 having electrode pads 15 previously formed therein. The barrier metal layer 11 is then selectively etched. An insulation layer 12 is then formed over the entire surface of the substrate, but with openings left over the remaining portions of the barrier metal layer 11. Then, a metal layer to form a wiring pattern 13 is deposited and selectively etched. Finally, solder balls 14 as external electrodes are mounted on the land portions of the wiring pattern 13. The semiconductor device is then cut along the broken line in Fig. 4C in order to form semiconductor devices having a chip-size package structure including a ball grid array electrode.

The semiconductor wafer 1 upon which the remaining structure of the device is formed is <u>not</u> taught or suggested to be separated from the remaining structure of the device following formation of the remaining structure as in Figs. 3A to 3C and Figs. 4A to 4C.

Further, separating the semiconductor wafer 1 from the remaining structure of the device in Takahashi would completely destroy the device. The semiconductor wafer 1 in the Takahashi device is integral to the device and not merely a support substrate that may be removed as implied in the Office Action. For example, as explained at col. 6, lines 54-57 of Takashi, the semiconductor wafer 1 has formed thereon semiconductor elements, wires, a passivation film, electrode pads, etc. prior to the process steps illustrated in Figs. 3A to 4C. Takahashi thus indicates that the semiconductor wafer 1 is an integral, necessary part of the semiconductor device, and separation thereof from the remaining structure of the device would destroy the semiconductor device's operation.

Moreover, nowhere does Takahashi teach or suggest how the semiconductor wafer might be separated from the remaining structure of the device without damaging the other components of the device. Accordingly, Takahashi also does not enable one of ordinary skill in the art to attempt to separate the semiconductor wafer from the remaining structure of the semiconductor device.

For all the foregoing reasons, Applicant respectfully submits that Takahashi neither anticipates nor renders obvious the process steps noted in each of independent claims 1, 5 and 11 above.

Finally, with particular respect to the method of claim 11, Takahashi also does not teach or suggest a process in which a connection substrate is disposed on a second base, separated from the first base, and ultimately separated from the second base as well. Contrary to the assertion in the Office Action, Takahashi fails to teach or suggest use of a second base for any reason whatsoever.

For at least the foregoing reasons, reconsideration and withdrawal of this rejection are respectfully requested.

III. Rejection Under 35 U.S.C. §103(a)

Claims 3, 8 and 12 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Takahashi. This rejection is respectfully traversed.

The Patent Office alleged that it would been obvious to have used a glass substrate in place of the silicon semiconductor wafer 1 described in Takahashi based upon the allegation that "it is well-known in the art to use a glass substrate for packaging." This rejection is respectfully traversed.

First, Applicant respectfully submits that even if the reasoning of the Patent Office with respect to claims 3, 8 and 12 were to be accepted, such reasoning would still not remedy the additional deficiencies of Takahashi discussed extensively above. Thus, one of ordinary skill in the art still would not have been led to the presently claimed invention from the teachings of Takahashi.

Second, as discussed above, Takahashi indicates that a silicon semiconductor wafer must be used as an integral part of the semiconductor device described therein. Applicant respectfully submits that it is not at all evident that one of ordinary skill in the art would have replaced the silicon semiconductor wafer described in Takahashi with a glass substrate where the substrate is not to be removed from the rest of the structure as in Takahashi.

For at least the foregoing reasons, Applicant respectfully submits that one of ordinary skill in the art would not have been led to the presently claimed invention from the teachings of Takahashi. Reconsideration and withdrawal of this rejection are respectfully requested.

IV. Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1-16 are in condition for allowance. Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Christopher W. Brown
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JAO:CWB/rxg

Attachment:
Appendix

Date: September 3, 2002

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claim:

11. (Amended) A method of manufacturing a semiconductor device, comprising:

a step of forming a connection substrate on ~~a~~the base, comprising, forming a metal wire to be connected to an electrode formed on a semiconductor chip, on a first base, applying an insulating material onto the metal wire to form an insulation layer, and forming another metal wire on the insulation layer, thereby connecting the metal wires which sandwich the insulation layer, through a contact hole formed in the insulation layer;

a step of disposing a second base on the connection substrate;

a step of separating the first base from the connection substrate;

a step of mounting a semiconductor chip on the metal wire that is bared; and

a step of separating the connection substrate from the second base.